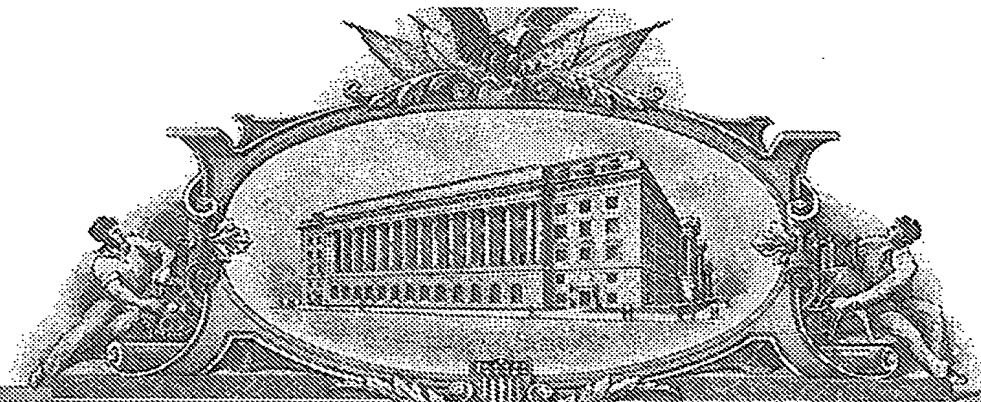


1277160



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

January 24, 2005

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE.

APPLICATION NUMBER: 60/528,140

FILING DATE: *December 09, 2003*

RELATED PCT APPLICATION NUMBER: *PCT/US04/41282*



Certified by

Under Secretary of Commerce
for Intellectual Property
and Director of the United States
Patent and Trademark Office

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

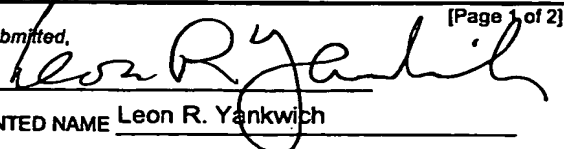
Express Mail Label No. EV 325774971 US

19587 U.S. PTO
60/528140

INVENTOR(S)					
Given Name (first and middle [if any])		Family Name or Surname		Residence (City and either State or Foreign Country)	
Donata R.		Sizemore		St. Louis, Missouri	
Additional inventors are being named on the <u>1</u> separately numbered sheets attached hereto					
TITLE OF THE INVENTION (500 characters max)					
Expression of Anthrax and Plaque Antigens					
Direct all correspondence to: CORRESPONDENCE ADDRESS					
<input checked="" type="checkbox"/> Customer Number: <div style="border: 1px solid black; padding: 5px; display: inline-block;">29425</div>					
OR					
<input checked="" type="checkbox"/> Firm or Individual Name		Leon R. Yankwich			
Address		Yankwich & Associates			
Address		201 Broadway			
City		Cambridge	State	MA	Zip 02139
Country		United States of America	Telephone	617-374-3700	Fax 617-374-0055
ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages <u>1</u> <input type="checkbox"/> CD(s), Number _____					
<input type="checkbox"/> Drawing(s) Number of Sheets _____ <input type="checkbox"/> Other (specify) _____					
<input type="checkbox"/> Application Date Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.					
<input checked="" type="checkbox"/> A check or money order is enclosed to cover the filing fees. (check no. 4722)					
<input type="checkbox"/> The Director is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: <u>50-0268</u>					
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.					
FILING FEE Amount (\$) <div style="border: 1px solid black; padding: 10px; display: inline-block;">160.00</div>					
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input type="checkbox"/> No.					
<input checked="" type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: <u>Department of Defense (JVAP), subcontract under DynPort Vaccine Co., LLC, no. DPSC-02-02257</u>					

Respectfully submitted,

SIGNATURE

[Page 1 of 2]


TYPED or PRINTED NAME Leon R. Yankwich

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Date December 9, 2003

REGISTRATION NO. 30,237

(if appropriate)

Docket Number: AVA-440.0 PRV

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Docket Number **AVA-440.0 PRV**

INVENTOR(S)/APPLICANT(S)		
Given Name (first and middle [if any])	Family or Surname	Residence (City and either State or Foreign Country)
Beth	Warner	St. Louis, Missouri
Julie	Lawrence	St. Louis, Missouri
Kevin	Killeen	Needham, Massachusetts

[Page 2 of 2]

Number 1 of 1

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Sizemore et al.
Serial No.:	(not yet assigned)
Filed:	(concurrently herewith)
Entitled:	Expression of Anthrax and Plague Antigens

Examiner:

Art Unit:

Atty. Docket No.: AVA-440.0 PRV

Mail Stop Provisional Application

Commissioner for Patents

P. O. Box 1450

Alexandria, VA 22313-1450

CERTIFICATE OF EXPRESS MAIL

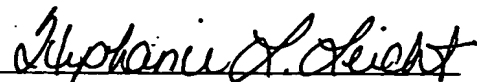
The undersigned hereby certifies that this certificate and the papers and fees identified below as being transmitted herewith are being deposited with the United States Postal Service as "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on the date indicated below and are addressed to: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

The following items are transmitted herewith:

1. Provisional Application For Patent Coversheet (2 pages) (in duplicate)
2. Specification (1 page)
3. Check no. 4922 to cover filing fee
4. return post card

Express Mail # EV 325774971 US

date of deposit: December 9, 2003



Stephanie L. Leicht

Expression of Anthrax and Plague Antigens

Atty. Docket No. AVA-440.0 PRV

Construction and Screening of Anthrax and Plague Vaccine Candidates Expressed in an Attenuated Δ phoP/Q *Salmonella typhimurium* Strain

Donata R. Sizemore¹, Beth Warner¹, Julie Lawrence¹ and Kevin Killeen². AVANT Immunotherapeutics, Inc St. Louis, MO 63114¹ and Needham, MA 02494²

Efficacy studies evaluating anthrax and plague vaccines in animals have shown that antibodies specific for PA (anthrax) and F1 and V antigen (plague) are potential correlates with protection. This parameter was used to select potential attenuated Δ phoP/Q *Salmonella typhimurium* constructs expressing PA, F1, V, F1-V or fragments of PA and V from Asd⁺ balanced-lethal plasmids to maintain stable antigen producing *Salmonella* vectors in the absence of antibiotic selection. Various plasmid expression vectors were evaluated that either secreted the antigen, placed the antigen in the outer membrane or expressed the antigen in the bacterial cell cytoplasm. To evaluate immunogenicity, mice were orally inoculated with frozen inocula of 1×10^9 CFU on days 0 and 14. Retained inocula samples were evaluated by Western blot after feeding to demonstrate the desired antigen was still being expressed. Naïve mice and mice inoculated with a live bacterial vector expressing no antigen were included as controls. Serum was collected at day zero prior to immunization from 10 mice and again at 2 and 4 weeks post-boost and evaluated for IgG antibodies against *Salmonella* vector and target antigen. Two strains were found to induce high levels of serum IgG specific to the expressed heterologous antigen. The strains were M020, which expresses soluble F1-V in the bacterial cell cytoplasm and M023, which expresses soluble V at extremely high levels in the bacterial cell cytoplasm. End-point titers (reciprocal of highest dilution above 0.1 OD450 as measured by ELISA) for serum IgG specific to V antigen for M020 vaccinated mice ranged from 100-1600 at 2 weeks post-boost and 400- 6400 at 4 weeks post-boost. End-point titers for M023 ranged from 1600-6400 at 2 weeks post-boost and 800- 25600 at 4 weeks post-boost. End-point titers for serum IgG specific to F1-V for M020 ranged from 100-6400 at 2 weeks post-boost and 400 to 6400 at 4 weeks post-boost. Currently six additional candidates are undergoing testing. Based on these early comparisons the most promising results were obtained from cytoplasmic localized F1-V and V antigens.

Document made available under the Patent Cooperation Treaty (PCT)

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Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse